City of Santa Monica

Public Hearing - SWIP Groundwater Replenishment Reuse Project

4/28/2022

RWQCB/DDW Introduction

Public Hearing/Workshop on the City's Groundwater Replenishment Reuse Project (Sustainable Water Infrastructure Project)

- Compliance with Title 22 CA Code of Regulations 60320.202
- Project Webpage for More Information: https://www.santamonica.gov/sustainable-water-infrastructure-project-swip
- Purpose of Public Hearing: to provide an opportunity for the public to comment on the City's Groundwater Replenishment Reuse Project (Sustainable Water Infrastructure Project) to use advanced treated recycled water to augment the City's groundwater supply at the Olympic Well Field.

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Public Comments and Hearing

- Public Hearing Date and Location:
  - Date: April 28, 2022
  - Time: 5:30PM PST
  - Register in advance for this meeting:
    Click Here to Register

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Public Comments and Hearing

- How to make comments:
  - Via e-mail: water.resources@santamonica.gov
  - Public comments would also be received during the Public Hearing
  - Deadline for Public Comments:
    630pm PST April 28, 2022

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City of Santa Monica – Water Resources Division

93,000+ residents
2,700+ commercial customers

Drinking water and fire protection

groundwater (local)
surface water (MWD)

Sewer collection and recycled water

9 million gallons
of high-quality drinking water daily

14 million gallons
of wastewater captured and delivered for treatment each day

77,000 gallons
per day of recycled water

4 water storage reservoirs
totaling 40 million gallons

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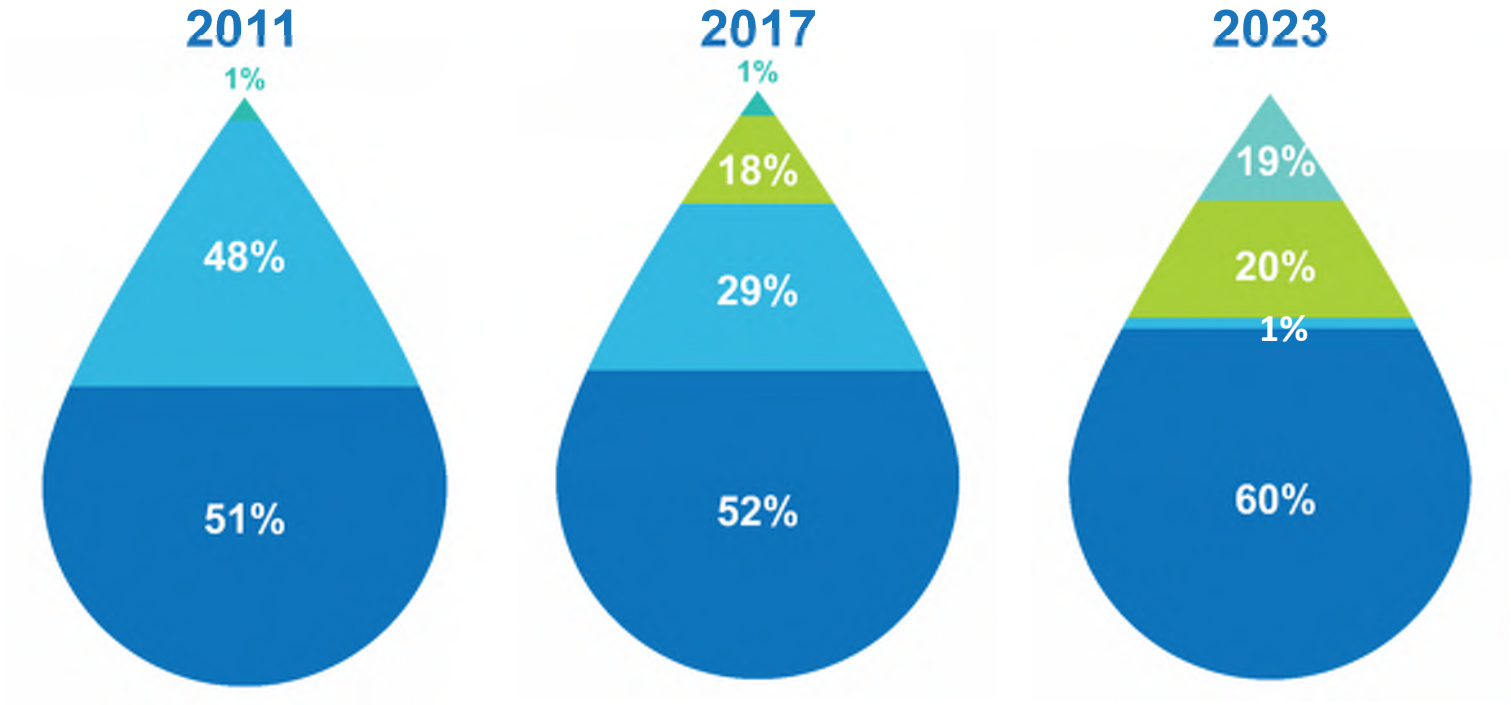
Goals of the City's Sustainable Water Master Plan

- Long term cost benefits for rate payers
- Diverse, sustainable, & drought resilient water supply to support a sustainable community
- Reduction of energy footprint to support carbon reduction goals for the City

Leveraging Alternative Water Supplies for a Sustainable Future



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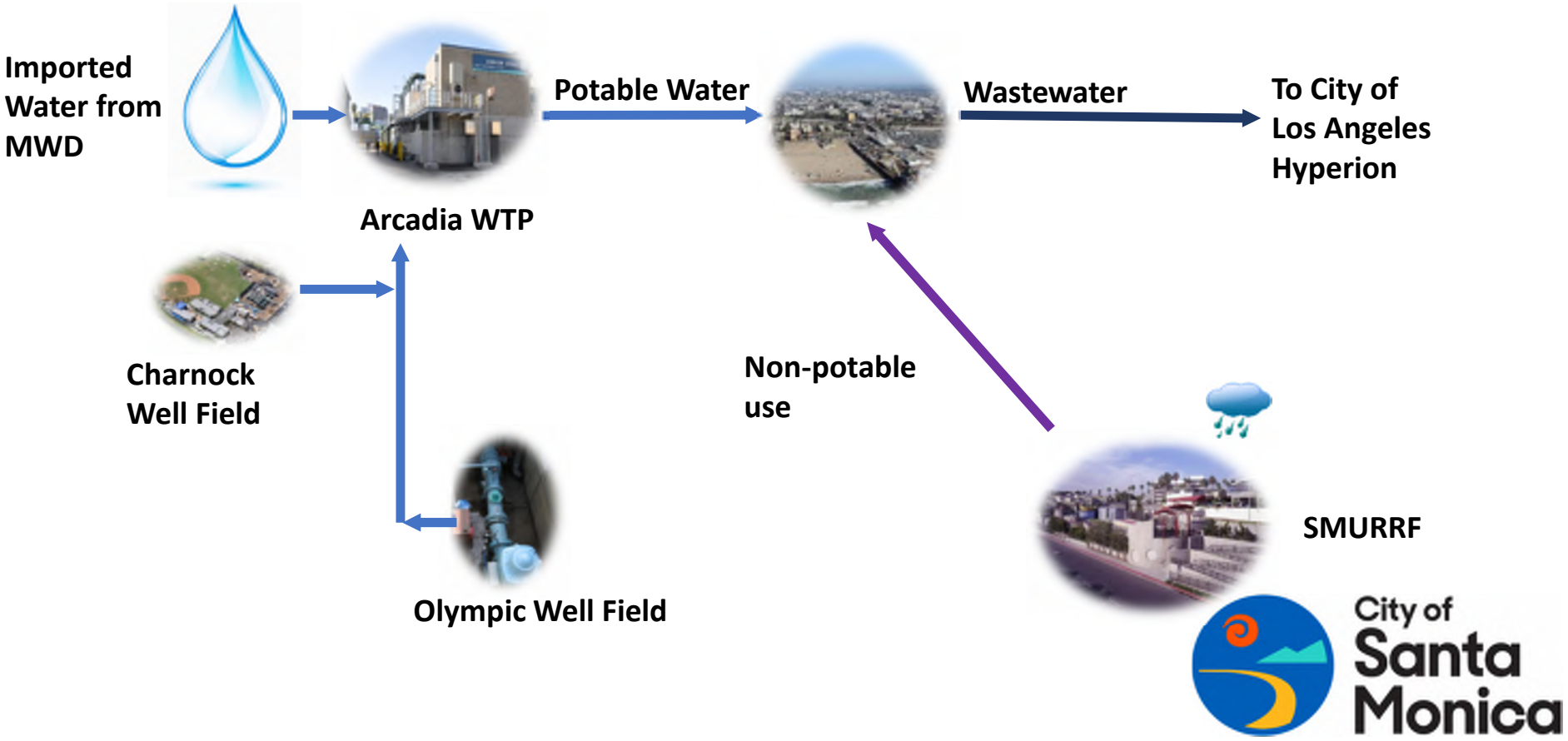
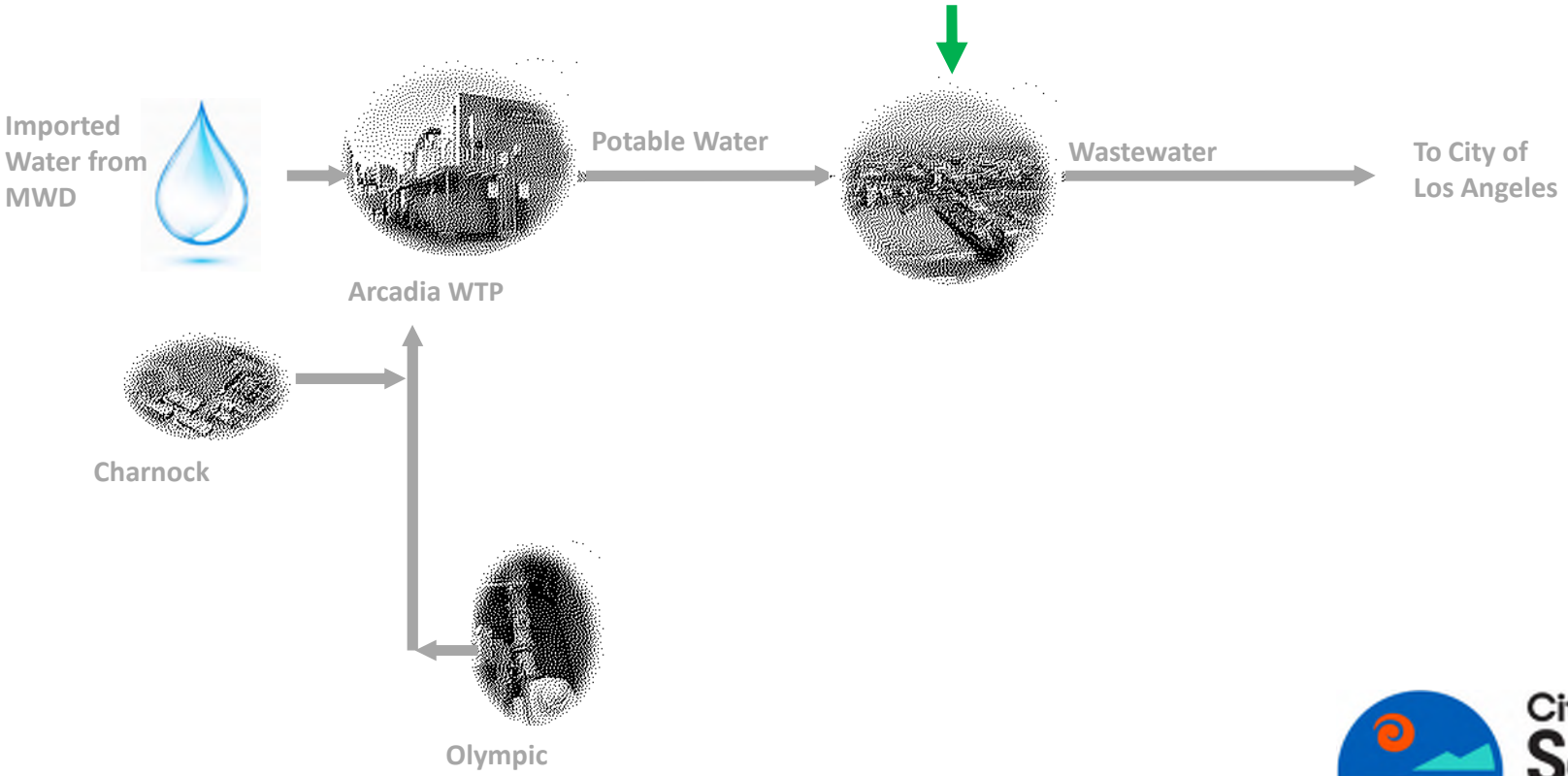
Integrated Approach to Maximize Local Water Resources



Component 1 – *Optimal* Conservation Plan



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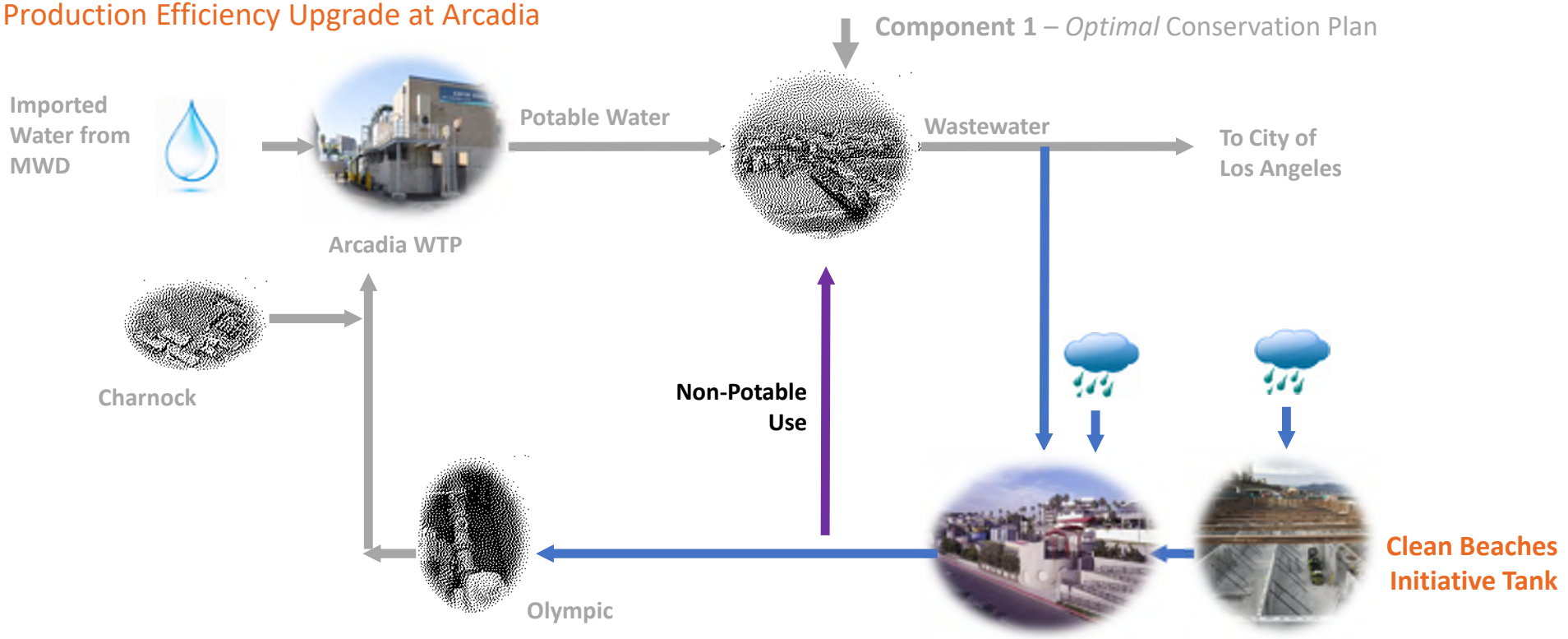
Component 2 – Alternative Water Supply

Production Efficiency Upgrade at Arcadia



Component 2 – Alternative Water Supply

-Stormwater + Urban Runoff **@ SMURRF** for Non-Potable and Potable Reuse

-Stormwater Capture + Municipal WW **@SWIP** for Potable Reuse

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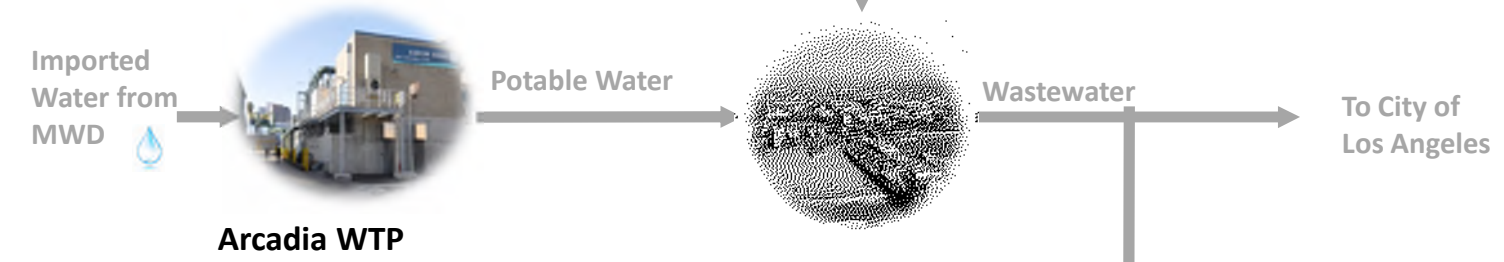
Component 2 – Alternative Water Supply
Production Efficiency Upgrade at Arcadia

Component 3 – New Local Groundwater
Expansion of Arcadia WTP

Component 1 – *Optimal* Conservation Plan



Component 3 – Impaired Groundwater
Separate Pipeline + Treatment for Olympic

Component 2 – Alternative Water Supply
Increase Recycled Water
Recharge Local Groundwater

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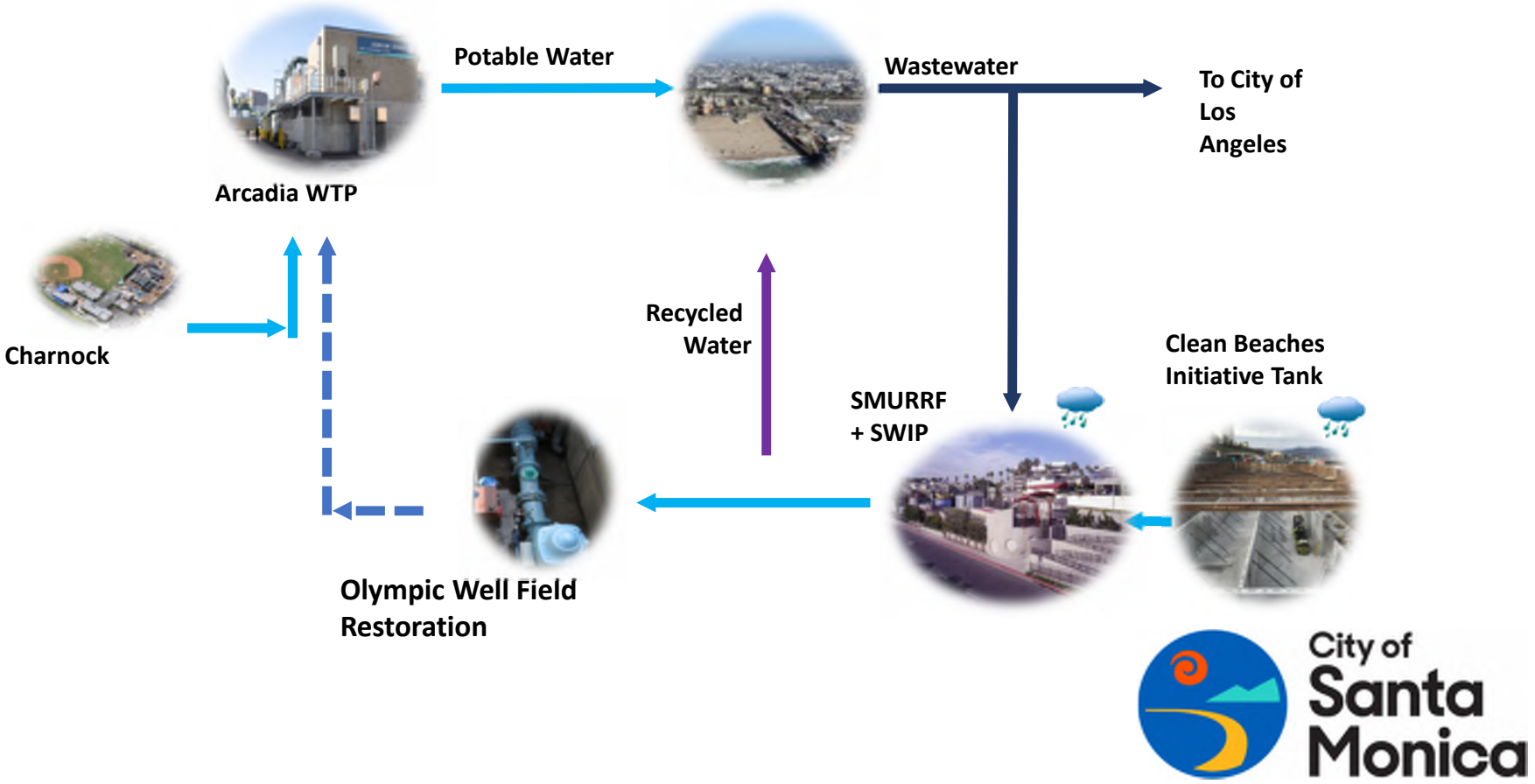
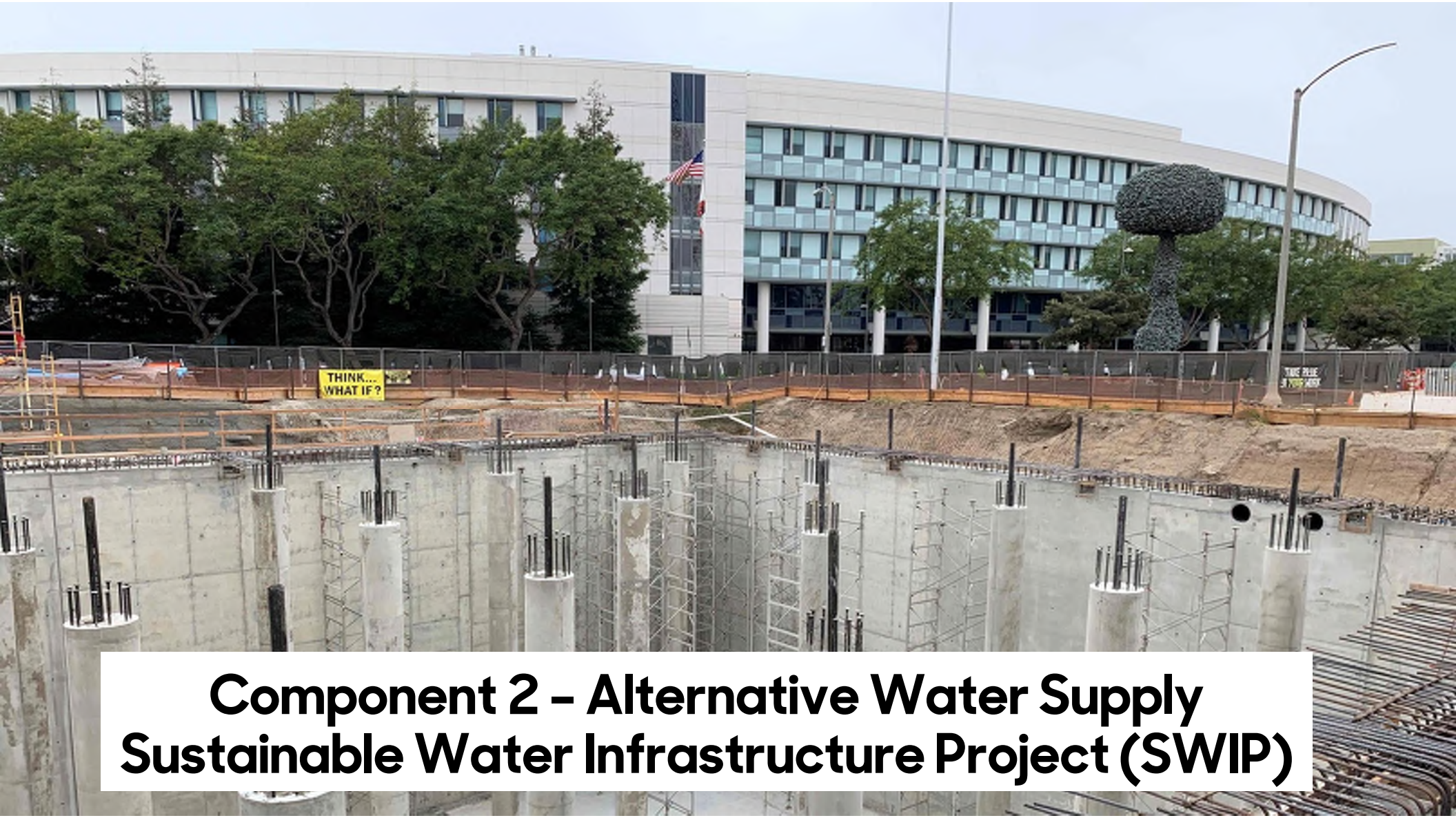
Component 1 – Conservation
Component 2 – Alternative Water Supply
Component 3 – New Local Groundwater





Component 2 – Alternative Water Supply
Sustainable Water Infrastructure Project (SWIP)

Sustainable Water Infrastructure Project (SWIP)

- Phase 1 – Stormwater Characterization and Use
- Phase 2 – Non-Potable Use
- **Phase 3 – Potable Reuse (Title 22 Groundwater Replenishment Reuse Project)**

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Title 22 Groundwater Replenishment Reuse Project

- California Code of Regulations Title 22, Article 5.2. Indirect Potable Reuse: Groundwater Replenishment – Subsurface Application
- The SWIP will produce two types of water for this application:
  - Advanced treated recycled water
  - Diluent water

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Sustainable Water Infrastructure Project Overview

- Element 1
  - 1.5 million gallon Clean Beaches Tank
  - Upgrades to SMURRF
- Element 2
  - New 1 million gallon per day advanced water treatment facility
  - 30/70 Blend of Stormwater and Wastewater
- Element 3
  - New 1.5 MG Stormwater tank

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SWIP's Multiple Benefits

- Improves beach water quality
- Provides Enhanced Water Management Plan (EWMP) and Municipal Separate Storm Sewer System (MS4) Permit compliance
- Drought resilient water supply
- Diversifies City's water supply portfolio
- Increases recycled water production
- Augments local groundwater supply
- Creates ~1,600 acre-feet per year (AFY) of local water supply

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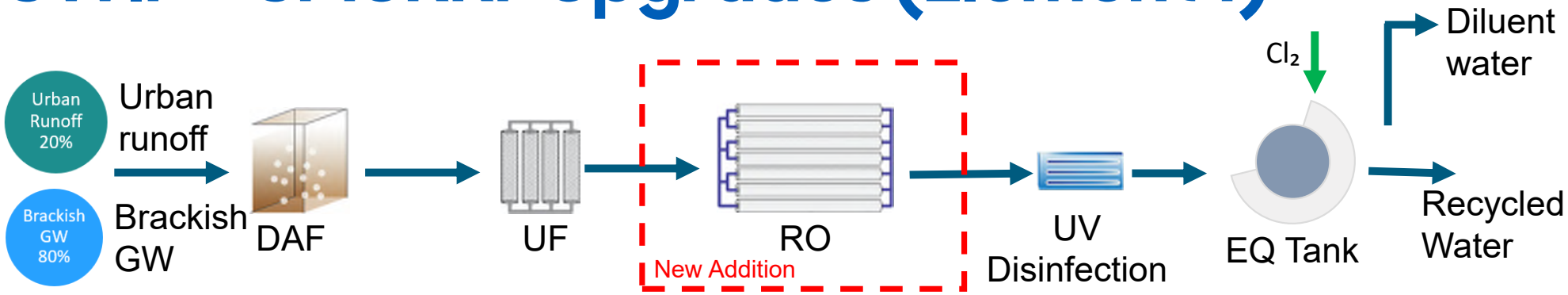
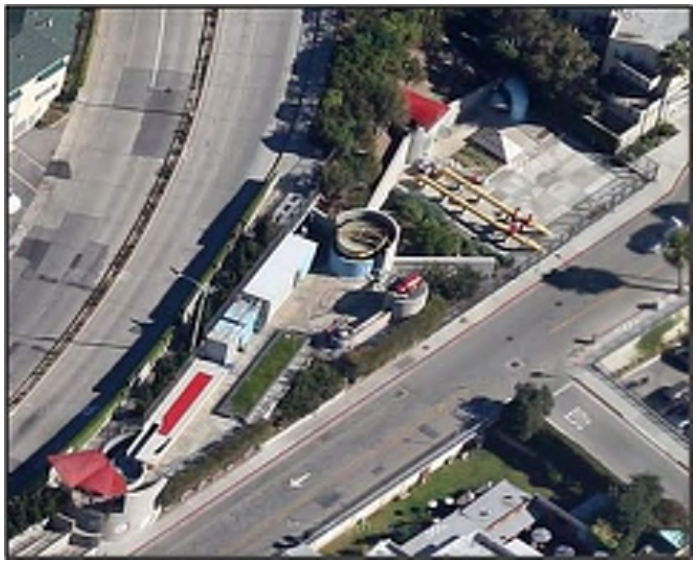
SWIP – SMURRF Upgrades (Element 1)





- Provides pollution control for Santa Monica Bay
- **Upgrade SMURRF to meet diluent water requirements under Title 22 GRRP requirements**
- RO added to further enhance water quality
- Produces up to 500 AFY of diluent water

SWIP Advanced Water Treatment Facility (Element 2)

MBR Tank

UV AOP System

RO System

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Stormwater Harvesting Tank (Element 3)

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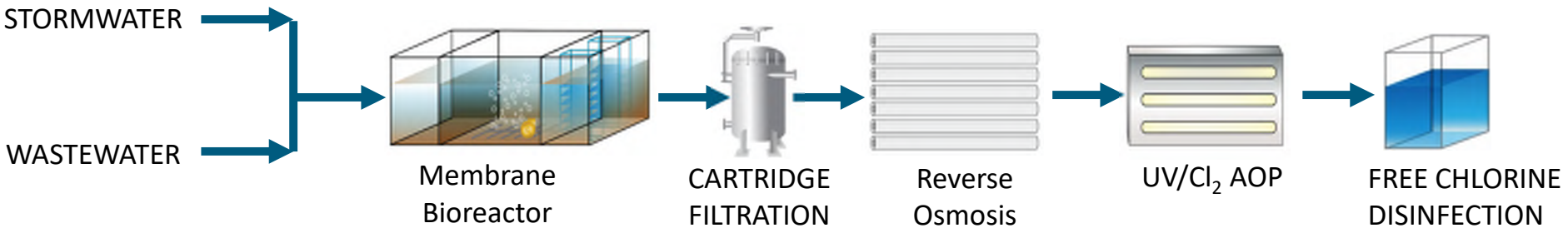
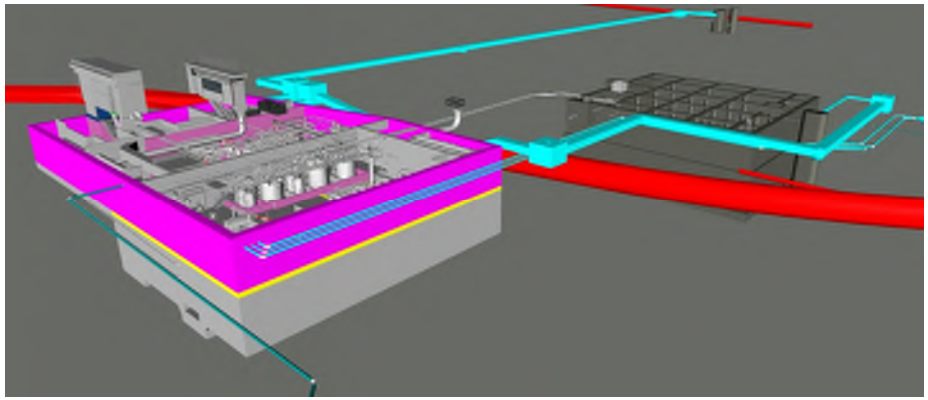
SWIP Element 2 – Advanced Water Treatment Facility



- Source Water - Wastewater with up to 30% stormwater contribution when available
- **Ability to meet 12-10-10 log removal for a GRRP within the SWIP AWTF**
- Produces 1,100 AFY of purified water for non-potable and potable reuse
- Meets all requirements under California Code of Regulations Title 22 Section 60320.201 Advanced Treatment Criteria



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Log Reduction Value Compliance for Advanced Treated Recycled Water

Process	Virus	Cryptosporidium	Giardia
MBR	1.0	2.5	2.5
Cartridge Filters	-	2.0	2.5
RO	1.5	1.5	1.5
UV-AOP	6.0	6.0	6.0
Chlorine	4.0	-	-
Total Provided	**12.5**	**12.0**	**12.5**
Required	**12.0**	**10.0**	**10.0**

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Proven Approach and Water Quality

- The SWIP will meet or exceed all Federal and State regulations (e.g., primary, secondary MCLs, and notification levels) for drinking water to ensure it is safe for groundwater recharge
- The City worked with State regulators to establish a robust and reliable treatment system
- California has several decades of experience with Groundwater Replenishment Reuse Projects
  - Orange County Water District
  - West Basin Municipal Water District
  - Water Replenishment District of Southern California

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Groundwater Replenishment Reuse Examples

Orange County Water District
Water Factory 21
Groundwater Replenishment System

Water Replenishment District of
Southern California
Leo J. Vander Lans Advanced Water
Treatment Facility

West Basin MWD
Edward C. Little
Water Recycling Facility

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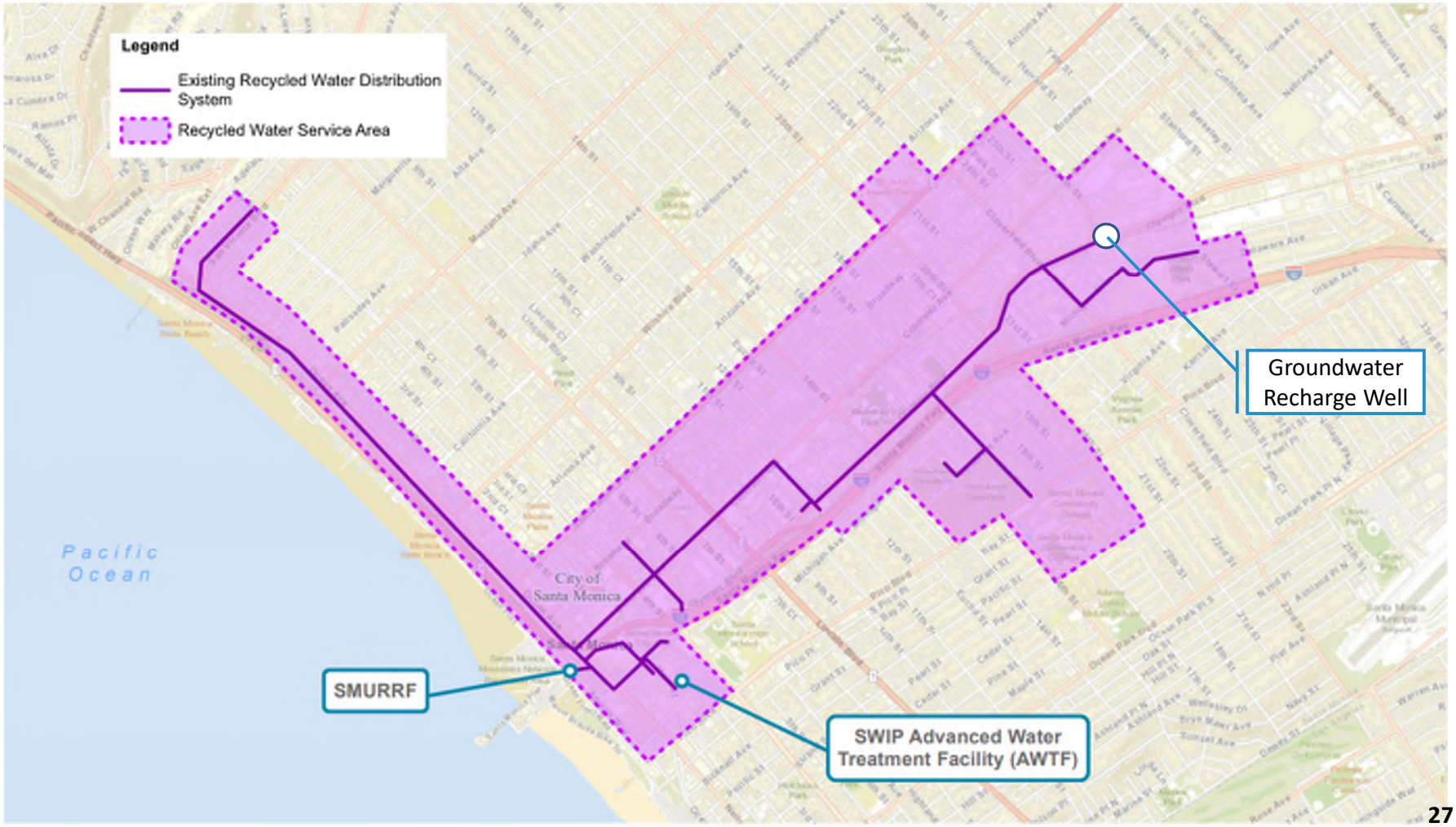
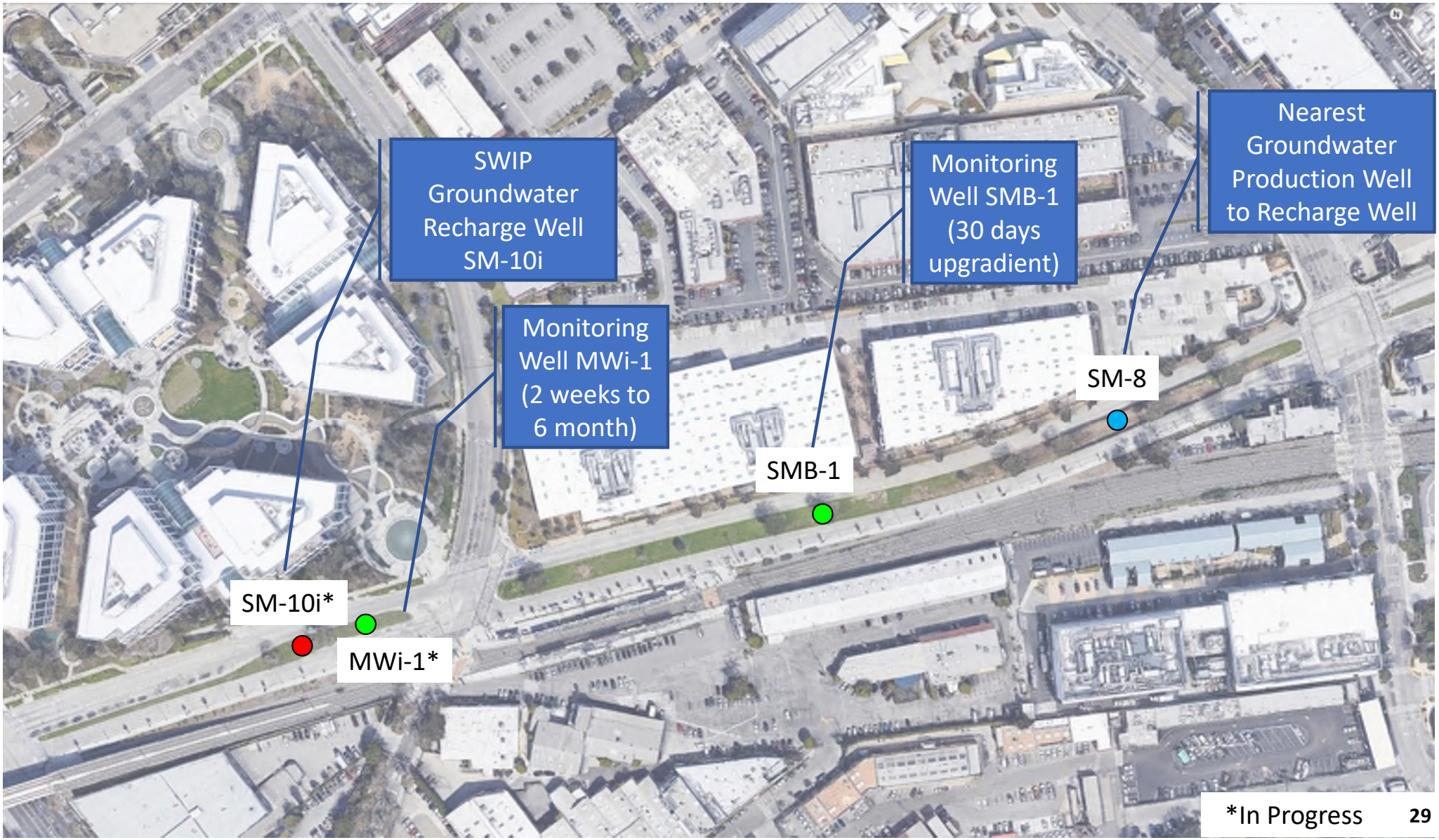
Groundwater Replenishment

Recycled Water Distribution




Groundwater Production Well SM-8
Groundwater Production Well SM-4
Groundwater Production Well SM-9
SWIP Groundwater Recharge Well SM-10i
SM-3/9
SM-4
SM-8
SM-10i
Stewart Street
Olympic Blvd.
26th Street


SWIP Groundwater Recharge Well SM-10i
Monitoring Well MWi-1 (2 weeks to 6 month)
Monitoring Well SMB-1 (30 days upgradient)
Nearest Groundwater Production Well to Recharge Well
SM-8
SMB-1
SM-10i*
MWi-1*
*In Progress

Groundwater Modeling Results

Groundwater Modeling Requirements

1. Support permitting for recycled water operations
2. Estimate travel time between groundwater recharge well and groundwater production well to ensure sufficient response retention time (>2 months) is provided between injection well and production well (Title 22 Section 60320.224).
3. Establish monitoring well network to monitor groundwater recharge operations (Title 22 Section 60320.226)

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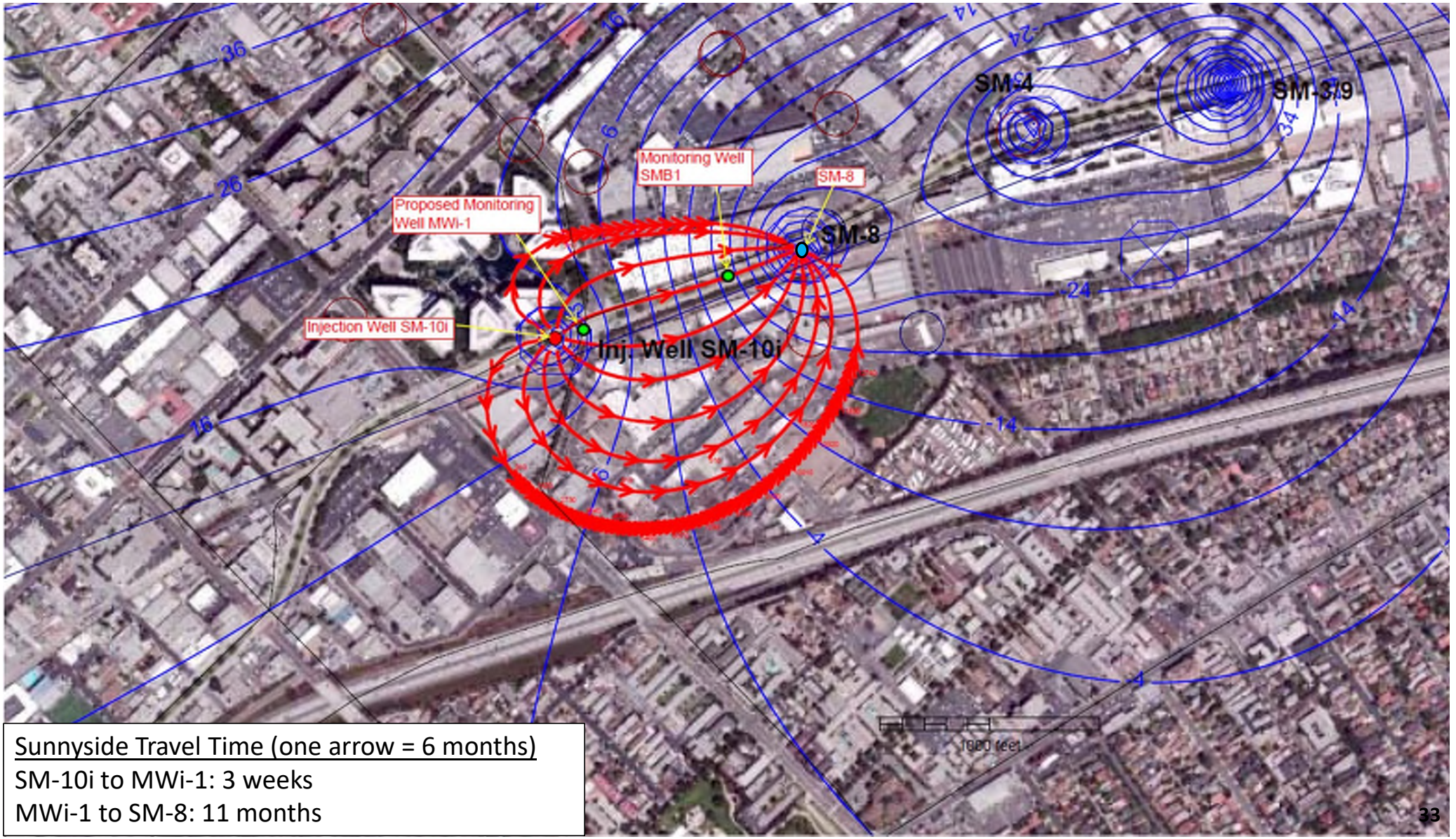
D-Zone Travel Time (one arrow = 6 months)
SM-10i to MWi-1: 2 months
MWi-1 to SM-8: 38 months



Sunnyside Travel Time (one arrow = 6 months)
SM-10i to MWi-1: 3 weeks
MWi-1 to SM-8: 11 months

California Code of Regulations, Title 22 §60320.226 Monitoring Well Requirements

(1) At least one monitoring well is located:

(A) no less than two weeks but no more than six months of travel time from the GRRP, and

(B) at least 30 days upgradient of the nearest drinking water well

(2) In addition to the well(s) in paragraph (1) and after consultation with the Department, at least one monitoring well is located between the GRRP and the nearest downgradient drinking water well;

(3) Samples from the monitoring wells in paragraphs (1) and (2) can be;

(A) Obtained independently from each aquifer initially receiving the water used as a source of drinking water supply that will receive the GRRP's recharge water, and

(B) Validated as receiving recharge water from the GRRP

	Sunnyside	D-Zone	Regulatory Requirement
SM-10i to MWi-1	3 weeks	2 months	>2 weeks and <6 months
MWi-1 to SM-8	11 months	30 months	>30 days from drinking water well
SM-10i to SM-8	12 months	38 months	>2 months

Antidegradation Analysis

1. Support permitting for recycled water operations
2. Assess impact, if any, on the Santa Monica Groundwater Basin by using advanced treated recycled water for groundwater recharge
3. Determine if groundwater recharge operations would be protective of beneficial uses (e.g., use of the local groundwater as a drinking water supply)
4. Would any potential incremental degradation be consistent with the maximum benefit to the people of the State

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Santa Monica Groundwater Basin – Water Quality Objectives

Parameter	Units	Basin Objective	SWIP AWTF Water Quality	SMURRF Water Quality	Blended Injection Water Quality[1]
Boron	mg/L	0.5	0.3	0.12	0.24
Chloride	mg/L	200	28	132	63
Nitrate (as NO3)	mg/L	45	3.9	0.6	2.8
Nitrite (as NO2)	mg/L	1	0.9	0.14	<0.1
Nitrate + Nitrate (as N)	mg/L	10	<0.1	<0.04	0.6
Sulfate	mg/L	250	3.2	7.4	4.6
Total Dissolved Solids (TDS)	mg/L	1000	120	310	184

1. Blended Injection Water Quality consists of 67% advanced treated recycled water from the SWIP AWTF and 33% diluent water from SMURRF

Anti-Deg Analysis – Assimilative Capacity

Parameter	Better than Groundwater	Compliance w/WQ Objective	Less than +10% Assimilative Capacity by Concentration	% Assimilative Capacity Used in 10 years	Less than 10% Assimilative Capacity by Mass in 10 years
Boron	No	Yes	No	-5.30%	Yes
Chloride	Yes	Yes	Yes	2.40%	Yes
Nitrate (as NO3)	No	Yes	Yes	-0.75%	Yes
Nitrate + Nitrate (as N)	No	Yes	Yes	-0.16%	Yes
Sulfate	Yes	Yes	Yes	21%	Yes
Total Dissolved Solids (TDS)	Yes	Yes	Yes	16%	Yes

Antidegradation Study Findings

- The project is consistent with the State of California's Antidegradation Policy
- Advanced treated recycled water from SWIP meets the groundwater basin's water quality objectives
- Implementation of the groundwater recharge project is in line with the beneficial uses of the Santa Monica Groundwater Basin and for the maximum benefit of the people (e.g., drinking water)

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Summary

- The SWIP uses a proven approach to provide the City with a drought resilient water supply and creates ~1,600 AFY of local water supply for the City
- The SWIP will comply with State of California regulations for a Title 22 Groundwater Replenishment Reuse Project
- Advanced treated recycled water and diluent water from the SWIP meets all federal and state drinking water quality requirements to recharge local groundwater aquifers

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Groundwater Replenishment Reuse Project Partners

Public Hearing

- Receive public comments for the City of Santa Monica's Title 22 Groundwater Replenishment Reuse Project
- How to make comments:
  - Via e-mail: water.resources@santamonica.gov
  - Public comments would also be received during the Public Hearing
  - Deadline for Public Comments: 630pm PST on April 28, 2022

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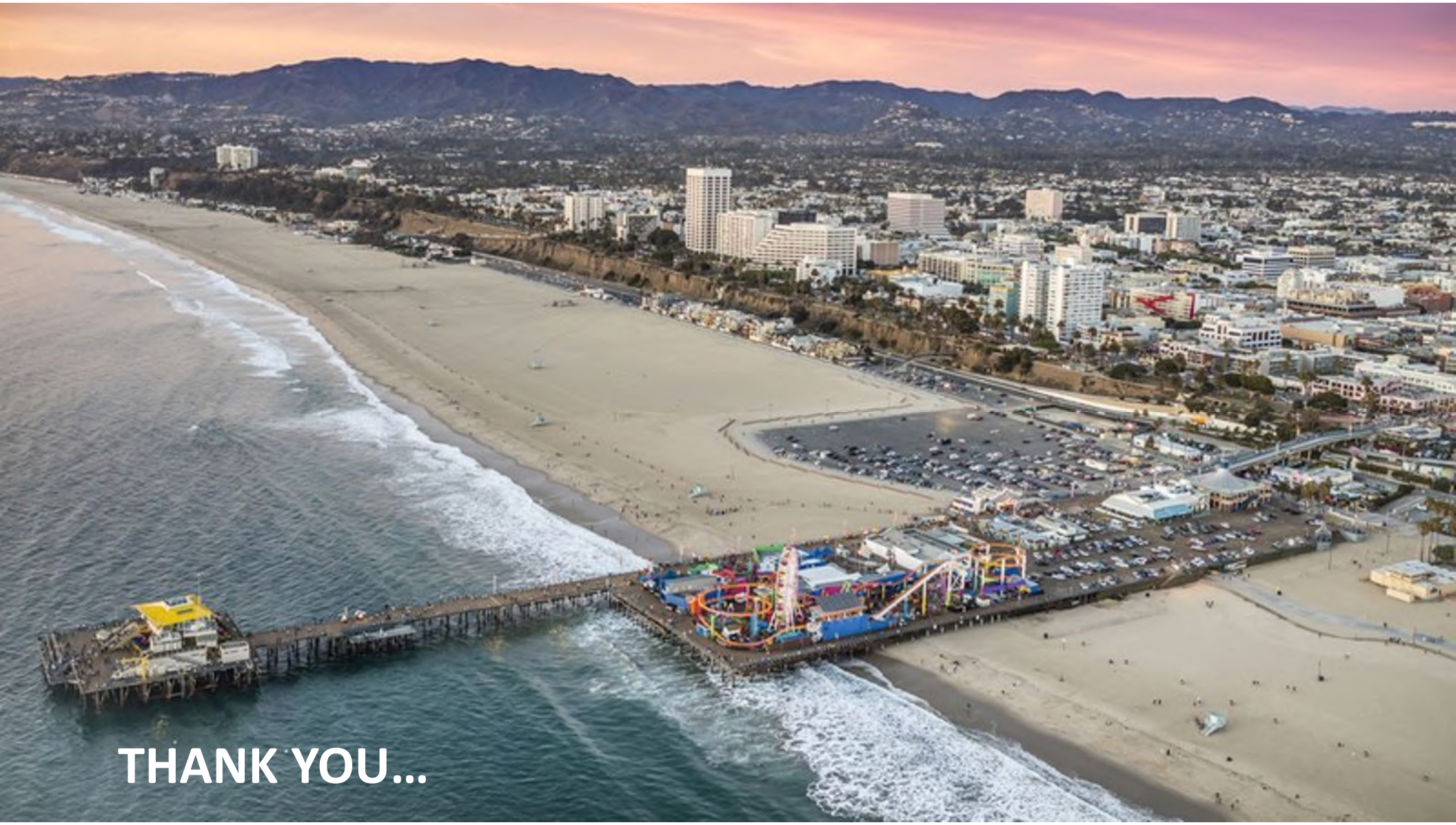
THANK YOU…